

IN THE CLAIMS:

1. A thermoplastic laminate plank comprising:
- a core comprising at least one thermoplastic material, wherein said core has a top surface and a bottom surface, and opposing sides;
- 5 a print layer affixed to said top surface of said core, wherein said print layer has a top surface and a bottom surface; and
- a protective layer affixed to said top surface of said print layer.
2. The plank of claim 1, further comprising an underlay layer located and affixed between said bottom surface of said print layer and said top surface of said core.
- 10 3. The plank of claim 1, wherein adhesive is present between said core and said print layer to affix said print layer to said core.
4. The plank of claim 2, wherein adhesive is present between said core and said underlay layer in order to affix said underlay layer to said core.
5. The plank of claim 4, wherein said adhesive comprises a hot melt glue.
- 15 6. The plank of claim 5, wherein said adhesive is a hot melt polyurethane glue.
7. The plank of claim 1, wherein said core is a rigid thermoplastic material.
8. The plank of claim 1, wherein said core comprises at least one thermoplastic material and at least one plasticizer.
- 20 9. The plank of claim 1, wherein said at least one plasticizer is present with the thermoplastic material in an amount of less than about 20% by weight of said core.
10. The plank of claim 1, wherein said at least one thermoplastic material is polyvinyl chloride.
11. The plank of claim 1, wherein said at least one thermoplastic material is a rigid polyvinyl chloride.
- 25 12. The plank of claim 1, wherein said core has a thickness of from about 5 mm to about 20 mm, a width of from about 2 cm to about 30 cm, and a length of from about 30 cm to about 130 cm.
13. The plank of claim 1, wherein said core has at least one cavity.

14. ~~The plank of claim 1, wherein said core has a series of paralleled cavities which are separated by said thermoplastic material.~~

15. ~~The plank of claim 14, wherein said series of cavities are rounded, triangular, or rectangular in cross-section.~~

16. ~~The plank of claim 14, wherein each cavities have dimensions of about 0.3 inch by about 0.3 inch and are separated by thermoplastic material having a thickness of from about 0.05 inch to about 0.07 inch.~~

17. ~~The plank of claim 1, wherein said core has at least one groove located on a side of said core.~~

18. ~~The plank of claim 17, wherein said core has a groove located on two sides of said core, wherein said sides are opposite to each other.~~

19. ~~The plank of claim 17, wherein said grooves have teeth located on the upper surface, lower surface, or both upper and lower surfaces of said grooves.~~

20. ~~The plank of claim 1, wherein two sides of said core are tapered or have beveled edges, wherein said sides are opposite to each other.~~

21. ~~The plank of claim 1, wherein said bottom surface of said core has at least two bottom feet or a series of co-extruded polymeric strips to raise said core from a sub-floor or substrate surface.~~

22. ~~The plank of claim 1, wherein said print layer comprises an aminoplast resin impregnated printed paper.~~

23. ~~The plank of claim 22, further comprising a printed design.~~

24. ~~The plank of claim 22, wherein said aminoplast resin is a melamine resin, a phenolic resin, or an urea resin, or combinations thereof.~~

25. ~~The plank of claim 22, wherein said aminoplast resin is a urea formaldehyde and melamine formaldehyde blend.~~

26. ~~The plank of claim 1, wherein said overlay comprises an aminoplast resin impregnated overlay paper and aluminum oxide imbedded on the top surface of said paper.~~

27. The plank of claim 1, wherein said overlay comprises an aminoplast resin impregnated overlay paper.

28. The plank of claim 2, wherein said underlay comprises an aminoplast resin impregnated paper.

5 29. The plank of claim 28, wherein said underlay comprises Kraft paper impregnated with an aminoplast resin.

30. A method of making a thermoplastic laminate plank of claim 1, comprising:
extruding said at least one thermoplastic material into the shape of said core;
affixing a laminate on said core, wherein said laminate comprises an overlay
10 affixed to said top surface of said print layer and optionally an underlay layer affixed to said bottom surface of said print layer.

31. A thermoplastic plank comprising:
a core comprising at least one thermoplastic material wherein said core has a
top surface, a bottom surface, and opposing sides;
15 a printed design on said top surface of the plank;
at least one protective coating on top of said printed design.

32. The thermoplastic plank of claim 31, wherein said protective coating comprises a polyurethane type coating with or without wear resistant particles in the coating.

20 33. The thermoplastic plank of claim 31, wherein said thermoplastic material comprises polyvinyl chloride type polymers.

34. A method of making the thermoplastic plank of claim 31 comprising
extruding at least one thermoplastic material into the shape of a core;
printing a design directly on the top surface of the plank; and
25 applying a protective coating on top of the printed design and curing the coating.

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35. A thermoplastic flooring plank comprising:
a core comprising at least one thermoplastic material, wherein said core has a top surface, a bottom surface, and opposing sides;

a thermoplastic layer located on said top surface of said core wherein said layer comprises at least one thermoplastic material with at least one pigmented compound.

36. A method of making the thermoplastic flooring plank of claim 35, comprising:

extruding at least one thermoplastic material into the shape of a core;

and extruding simultaneously or subsequently a layer comprising at least one thermoplastic material with at least one pigmented compound wherein said layer is extruded on the top surface of said core.

~~37. The thermoplastic laminate of claim 1, wherein said thermoplastic material comprises at least one thermoplastic resin, at least one processing aid, at least one impact modifier, at least one lubricant, and at least one stabilizer.~~

38. The thermoplastic laminate of claim 37, wherein said thermoplastic material further comprises at least one pigment.

~~39. A thermoplastic flooring plank comprising at least one thermoplastic material, said plank having a substantially planar top surface, opposing sides, opposing ends, and a bottom surface, wherein said bottom surface has a plurality of channels formed therein, each of said channels extending longitudinally from one end of the plank to the other end of the plank.~~

40. The thermoplastic flooring plank of claim 39, wherein said channels are substantially U-shaped.

41. The thermoplastic flooring plank of claim 39, wherein said channels are substantially \sqcup -shaped.

42. A flooring system comprising a plurality of the thermoplastic flooring planks of claim 39 connected together.

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~~43.~~ A thermoplastic flooring plank comprising at least one thermoplastic material, said plank having substantially planar top and bottom surfaces, opposing ends, and a series of elongate cavities between said top and bottom surfaces, each of said cavities extending from one of said opposing ends of said plank to another of said opposing ends of said plank.

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44. A flooring system comprising a plurality of the thermoplastic flooring planks of claim 43 connected together.

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